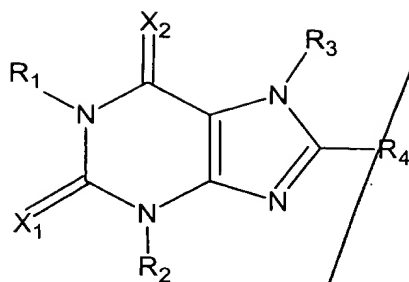
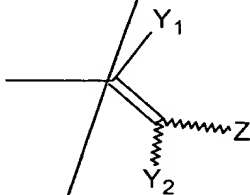


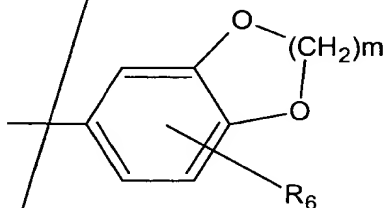
Sub
(cont)



wherein X_1 and X_2 independently represent O or S, R_1 , R_2 and R_3 independently represent hydrogen, lower alkyl, lower alkenyl or lower alkynyl; R_4 represents the following group:



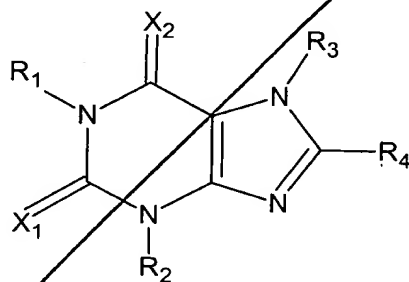
wherein Y_1 and Y_2 independently represent hydrogen, halogen or lower alkyl, and Z represents substituted or unsubstituted aryl, or the following group:



wherein m is an integer of 1 to 3 and R_6 represents hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino, or a substituted or unsubstituted heterocyclic group selected from furyl and pyridyl; and wherein the substituted aryl and the substituted heterocyclic group have 1 to 3 independently-selected substituents selected from the group

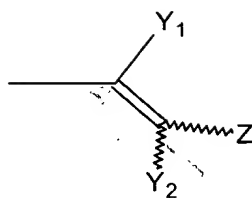
D1 Sub
Critic
consisting of lower alkyl, hydroxy, lower alkoxy or lower alkoxy substituted with a substituent(s) selected from the group consisting of hydroxy, lower alkoxy, halogen, amino, azido, carboxy and lower alkoxycarbonyl, halogen, nitro, amino, lower alkylamino, di(lower alkyl)amino, trifluoromethyl, trifluoromethoxy, benzyloxy, phenyl, phenoxy, lower alkanoyl, lower alkanoyloxy, aroyloxy, aralkanoyloxy, carboxy, lower alkoxycarbonyl, lower alkylcarbamoyl, di(lower alkyl)carbamoyl, sulfo, lower alkoxysulfonyl, lower alkylsulfamoyl and di(lower alkyl)sulfamoyl; or a pharmaceutically acceptable salt thereof, as an active ingredient.

D2 OK
10. (amended) A method of treating neurodegenerative disorders except for Parkinson's disease and attention deficit hyperactivity disorder, which method comprises administering an effective dose of a xanthine derivative represented by formula (I):

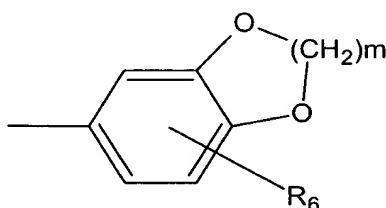


(I)

Sub F2
wherein X₁ and X₂ independently represent O or S, R₁, R₂ and R₃ independently represent hydrogen, lower alkyl, lower alkenyl or lower alkynyl; R₄ represents the following group:



wherein Y_1 and Y_2 independently represent hydrogen, halogen or lower alkyl, and Z represents substituted or unsubstituted aryl, or the following group:



wherein m is an integer of 1 to 3 and R_6 represents hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino, or a substituted or unsubstituted heterocyclic group selected from furyl and pyridyl; and wherein the substituted aryl and the substituted heterocyclic group have 1 to 3 independently-selected substituents selected from the group consisting of lower alkyl, hydroxy, lower alkoxy or lower alkoxy substituted with a substituent(s) selected from the group consisting of hydroxy, lower alkoxy, halogen, amino, azido, carboxy and lower alkoxycarbonyl, halogen, nitro, amino, lower alkylamino, di(lower alkyl)amino, trifluoromethyl, trifluoromethoxy, benzyloxy, phenyl, phenoxy, lower alkanoyl, lower alkanoyloxy, aroyloxy, aralkanoyloxy, carboxy, lower alkoxycarbonyl, lower alkylcarbamoyl, di(lower alkyl)carbamoyl, sulfo, lower alkoxysulfonyl, lower

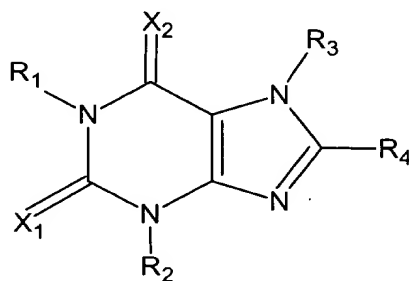
Dr. Wright
F2
cont

alkylsulfamoyl and di(lower alkyl)sulfamoyl; or a pharmaceutically acceptable salt thereof, as an active ingredient.

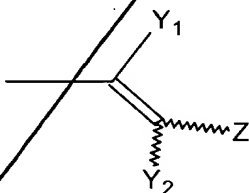
D3

14. (twice amended) A method of treating Alzheimer's disease, which comprises administering an effective dose of the xanthine derivative represented by formula (I):

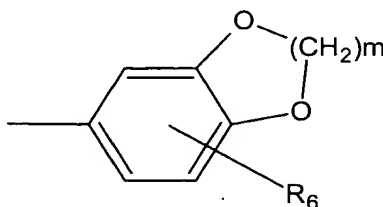
Sub F3



wherein X₁ and X₂ independently represent O or S, R₁, R₂ and R₃ independently represent hydrogen, lower alkyl, lower alkenyl or lower alkynyl; R₄ represents the following group:



wherein Y₁ and Y₂ independently represent hydrogen, halogen or lower alkyl, and Z represents substituted or unsubstituted aryl, or the following group:



*F3
cont
D3
Contd*

wherein m is an integer of 1 to 3 and R₆ represents hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino, or a substituted or unsubstituted heterocyclic group selected from furyl and pyridyl; and wherein the substituted aryl and the substituted heterocyclic group have 1 to 3 independently-selected substituents selected from the group consisting of lower alkyl, hydroxy, lower alkoxy or lower alkoxy substituted with a substituent(s) selected from the group consisting of hydroxy, lower alkoxy, halogen, amino, azido, carboxy and lower alkoxycarbonyl, halogen, nitro, amino, lower alkylamino, di(lower alkyl)amino, trifluoromethyl, trifluoromethoxy, benzyloxy, phenyl, phenoxy, lower alkanoyl, lower alkanoyloxy, aroyloxy, aralkanoyloxy, carboxy, lower alkoxycarbonyl, lower alkylcarbamoyl, di(lower alkyl)carbamoyl, sulfo, lower alkoxysulfonyl, lower alkylsulfamoyl and di(lower alkyl)sulfamoyl; or a pharmaceutically acceptable salt thereof, as an active ingredient.
